



# Center for Manufacturing Research

## CMR Mission

To advance and support scientific and engineering knowledge in areas related to manufacturing through fundamental research and technology transfer activities.

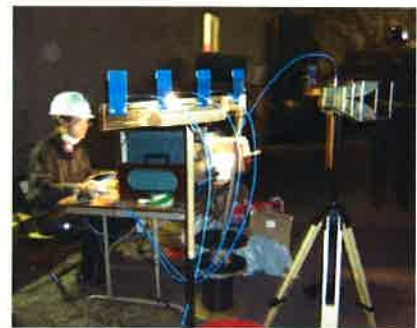
## Strategic Research Areas

- Advanced Manufacturing
- Materials and Devices for Energy Storage and Conversion
- Networking and Algorithms for Big Data

## Research and Testing Facilities

### Fuel Cells and Thin Films / Fuel Cells and Electrochemistry

- Single Cell Fuel Cell Hardware
- Potentiostat
- Impedance / Gain-Phase Analyzer
- Rotating Disk Electrode
- Milliohmmer
- Stack Testing
- Dip Coater



### Wireless Communication, Multi-GHz, Wideband Signal Analysis

- Cognitive Networking and Sensing
  - Arbitrary Waveform Generator
  - Digital Phosphor Oscilloscope

### Acoustics and Non-Destructive Evaluation Lab

TTU owns one of the most extensive noise control facilities in Tennessee with two adjacent reverberation rooms and an anechoic chamber. Sound measuring equipment is available.

- Acceleration & Displacement Measurement Equipment 0-10 kHz
- 2 Adjacent Reverberation Rooms
- Small Anechoic Chamber





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## Research and Testing Facilities

### Working with Industry

- Laboratory Testing – State of the art facilities with competitive pricing
- Faculty Consulting – Matches faculty consultants' expertise with industry to address specific needs
- Center Affiliateship Program - Gives business and industry access to high quality R&D work
- **Energy Assessments** – Free on-site energy efficiency assessments - Tennessee 3-Star Industrial Assessment Center , Contact (931) 372-6386, mdavis@tntech.edu



### Material Characterization

- Environmental SEM w/ Tensile Load Frame
- Electron Microprobe w/ 3 WDS
- Full Service Material Preparation
- Microhardness & Automated Particle Density Software
- X-Ray Diffractometer



### Affiliateship Program for Testing Services

This program provides use of equipment by the industry. Contact CMR for agreement information.

### Mechanical Properties

- 20 kip & 50 kip Automated Load Frames
  - Automated Rockwell Hardness
  - Creep Furnace (<800 deg C)